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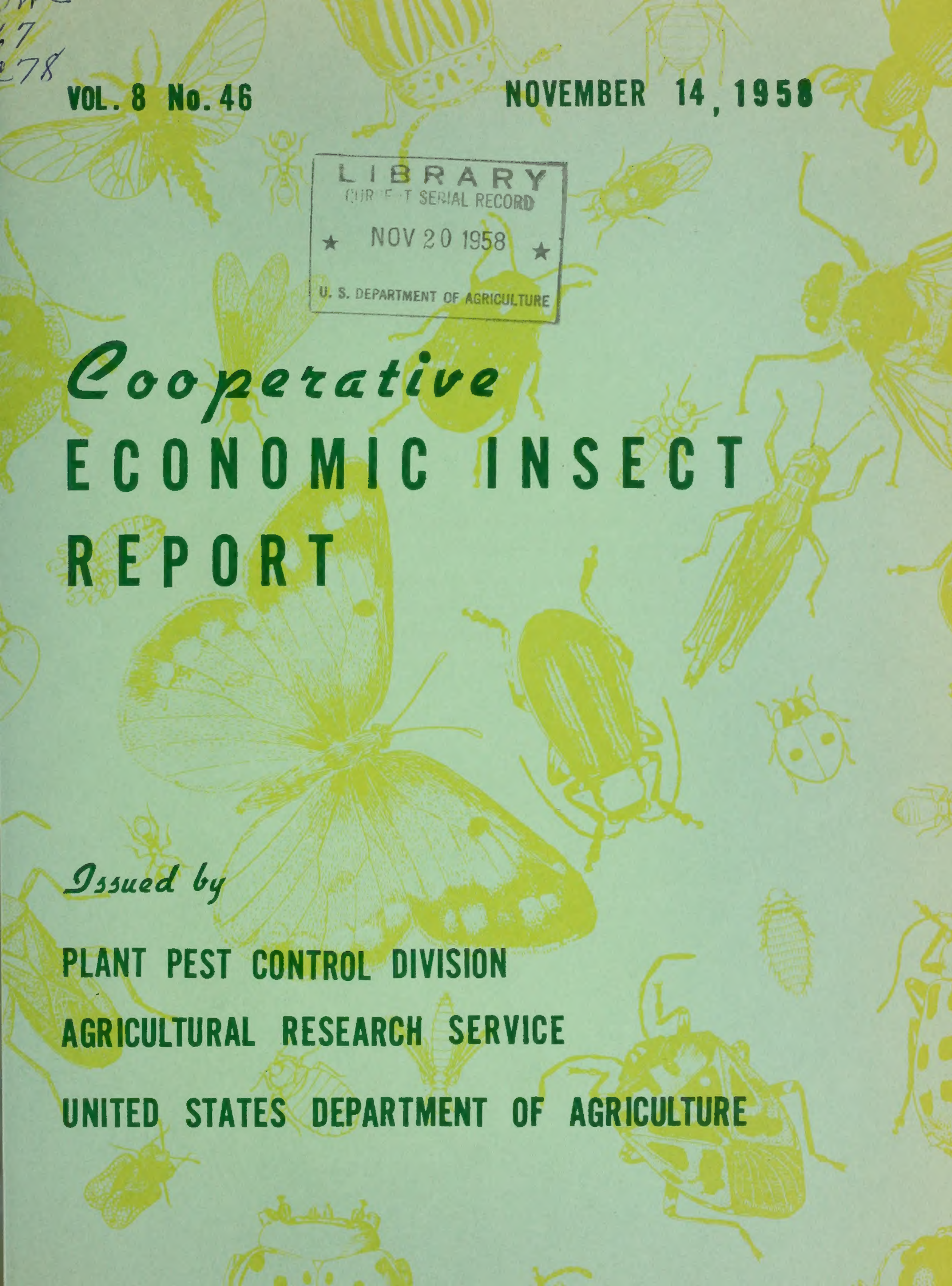

VOL. 8 No. 46

NOVEMBER 14, 1958

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U. S. DEPARTMENT OF AGRICULTURE

Cooperative
ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
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Volume 8 November 14, 1958 Number 46

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

CORN LEAF APHID counts high in late grain sorghum in southern Oklahoma and on barley in Monterey County, California. (p. 939).

CABBAGE LOOPER severe on lettuce in Imperial County, California, and building up on same crop in Eddy County, New Mexico. (p. 940).

Haptoncus luteolus populations on figs high in Madera and Fresno Counties, California. (p. 940).

PINK BOLLWORM heavy in green bolls in southern Dona Ana County, New Mexico. (p. 941).

INSECT DETECTION: A *Scale* new to Oklahoma. (p. 942).

CORRECTIONS. (p. 943).

SUMMARY OF INSECT CONDITIONS - UTAH - 1958. (p. 944).

INSECTS not known to occur in the United States. (p. 949).

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Reports in this issue are for the week ending November 7, unless otherwise designated.

WEATHER OF THE WEEK ENDING NOVEMBER 10

A succession of changes in the weather occurred as pressure systems swept across the Nation during the week. These changes mostly affected the more northern States, but at times spread into Southern areas except the Southwest. Dry weather persisted from southern California and southwestern Arizona eastward over the southern Great Plains. The High Plains of Texas have had no significant rain for over a month. Temperatures over most of the country averaged higher than for the previous week. This was especially noticeable in Texas and the Rocky Mountain and Pacific States. Saturday and Sunday's temperatures equaled or exceeded previous records for so late in the fall at West Palm Beach, Florida (90° on the 8th equaled previous record), Winnemucca, Nevada (75° on the 9th), and Salt Lake City,Utah (74° on the 9th). Brisk winds accompanied a series of disturbances inland over the Pacific Northwest and Northern Interior. Precipitation fell on most days in the Pacific Northwest and Idaho. Monday brought damaging winds to the Pacific Northwest. Blowing dust was raised at Idaho Falls, Idaho, and gusts of 64 m.p.h. occurred at Livingston, Montana. On Tuesday, this energetic disturbance joined a weather front extending from northern California to N. Dakota. It brought damaging winds to Wyoming, where Sheridan reported peak gusts of 86 m.p.h. The arrival of chilling winds dropped temperatures to freezing in a few hours. In South Dakota, western Nebraska and Kansas these winds whipped up dust early Tuesday evening and on Wednesday gusts rose to 63 m.p.h. at Mason City, Iowa, and extended over much of the Midwest. On Thursday morning cold, dry air poured across the Appalachians and brisk westerly and northwesterly winds swept into the North Atlantic States. On Friday, Ohio had its coldest temperatures of the season. More high winds occurred the latter part of the week in the northern Great Plains, northern Rockies and Pacific Northwest. Blizzard conditions impeded traffic in the northern mountian passes of Colorado.

Freezing temperatures over much of the same area as the previous week extended further southward into parts of northern Louisiana and northern Georgia. Generally, temperatures for the week averaged 3° or more above normal north of a line joining southeastern Arizona and upper Michigan, while elsewhere averages ranged from near normal to about 3° below normal. Most of the country had less than one-half inch of precipitation. The larger weekly totals exceeded 3 inches in parts of Florida and west of the Cascade Mountains. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - CALIFORNIA - Survey completed by County, State and Federal personnel indicated potential population of 7 or more grasshoppers per square yard can be expected to infest approximately 4,523,300 acres of grassland under normal conditions in 1959. (Cal. Coop. Rpt., Sept.). NEW MEXICO - Damaged borders of winter wheat fields adjacent to non-cultivated fields. About 10,000 acres replanted in Curry County, farmers preferring this to attempting controls. (N. M. Coop. Rpt.). UTAH - Largely Melanoplus spp. are especially numerous in mountians south of Mantua, Box Elder County. (Knowlton).

EUROPEAN CORN BORER (Pyrausta nubilalis) - ARKANSAS - Infestations in southwestern counties much lower than other counties, since these counties were infested for first time in 1958. (Ark. Ins. Rpt.). VIRGINIA - Density survey in 20 northern and southwestern counties showed an average of 252 borers per 100 stalks, with 80 percent of stalks examined being infested. The 1957 figures were 117 borers per 100 stalks and 63 percent of examined stalks infested. (Morris). OKLAHOMA - Survey of some corn fields in Nowata, Tulsa and Payne Counties failed to show presence of infestations. (Arbuthnot).

SORGHUM WEBWORM (Celama sorghiella) - OKLAHOMA - Averaged 4-10 per head in a few fields of late grain sorghums in southern areas. (VanCleave).

TERMITES - VIRGINIA - Unidentified species found hollowing out corn stalks in Nansemond County and causing stalks to break over in late October. (Matheny).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Averaged as high as 1,000 per head in a few fields of late grain sorghum in southern part of State. (VanCleave). TEXAS - Heavy and damaged Sudan grass in Frio County. (Harding). CALIFORNIA - Heavy on barley in Soledad area, Monterey County. (McLean).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Light to medium in barley and oat fields in Madison County. (Garrett).

PEA APHID (Macrosiphum pisi) - UTAH - Ranged scarce to moderate on Cache County alfalfa. (Knowlton). KANSAS - Numbered about 50 per sweep at Hays, Ellis County, November 1. (Harvey).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Averaged 10-25 per sweep in southern and south central alfalfa fields. (VanCleave). UTAH - Scarce to moderate on alfalfa in Cache County. (Knowlton). ILLINOIS - Collected in Union County, but exact population counts were not made. (Ill. Ins. Rpt.). KANSAS - Numbered about 50 per sweep at Hays, Ellis County, November 1. (Harvey).

TARNISHED PLANT BUG (Lygus lineolaris) - OKLAHOMA - Averaged 0-2.5 per sweep in southern and south central alfalfa fields. (Van Cleave).

ALFALFA WEEVIL (Hypera postica) - MASSACHUSETTS - Larvae ranged 0-110 and adults 0-3 per 100 sweeps in Worcester County, October 3. Heaviest infestation at Dudley. Larvae ranged 14-37 per 100 sweeps in Norfolk County on same date; 0-1 in Hampshire County, October 6; and 0-24 in Barnstable County, October 8. Adults averaged 0-2 per 100 sweeps and larvae 0 in Berkshire County, October 10, which is unusual in that this is one of the areas of original infestation. (Lavigne, Shaw). DELAWARE - Larvae in some alfalfa fields in Kent and New Castle Counties. Adults averaged 1-2 per 10 sweeps in several Kent County alfalfa fields. (Burbutis, Conrad).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - DELAWARE - In red clover in New Castle and Kent Counties. (Burbutis, Conrad).

CLOVER ROOT CURCULIO (Sitona hispidula) - MASSACHUSETTS - Adults ranged 0-2 per 100 sweeps in Worcester County and 0-9 in Norfolk County, October 3; 0-9 in Barnstable County, October 8; and 1-32 in Berkshire County on October 10. Adult fall population in extremely light. Many dead specimens were observed in the field attacked by Beauveria bassiana. (Lavigne, Shaw).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - OKLAHOMA - Averaged 0.4-2 per sweep in southern and south central alfalfa fields. (VanCleave).

POTATO LEAFHOPPER (Empoasca fabae) - DELAWARE - Common to prevalent in some alfalfa fields in Kent and New Castle Counties. (Burbutis, Conrad).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - OKLAHOMA - Averaged 0.5-1 per sweep in alfalfa fields in the southern and south central parts of the State. (VanCleave).

GRANULATE CUTWORM (Feltia subterranea) - CALIFORNIA - Continued a major pest of lawns in many locations in State and remained heavy in dichondra lawns in San Diego, San Diego County. (Cal. Coop. Rpt.).

WHITE GRUBS - NEW MEXICO - Light and damaged fescue lawns at Las Cruces, Dona Ana County. (N. Mex. Coop. Rpt.).

FRUIT INSECTS

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Heavy on citrus at Sanger, Fresno County, and light on an orange tree in Fillmore, Ventura County. (Cal. Coop. Rpt.).

A VINEGAR FLY (Drosophila melanogaster) - CALIFORNIA - Occurred in extremely larger numbers in fig orchards and dry yards than ever before experienced in Merced and Fresno Counties. Late-season warm weather is considered responsible. (Fig Institute).

Fig Insects in California - Haptoncus luteolus far outnumbered Carpophilus hemipterus this season. Normally it is only 3-5 percent of the population but this season it ran 30-40 percent of populations infesting figs in Madera and Fresno Counties. (Fig Institute).

SMALL CHESTNUT WEEVIL (Curculio auriger) - VIRGINIA - Damaged chestnuts on trees on a Franklin County farm. Det. W. H. Anderson. (Rowell, Tucker).

WALNUT CATERPILLAR (Datana integerrima) - TEXAS - Light and attacked pecan trees near Greenville, Hunt County. (Davis).

RED-NECKED CANE BORER (Agrilus ruficollis) - OKLAHOMA - Populations in Payne County brambles appear lower than in last 3 years. (Bieberdorf).

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - CALIFORNIA - Severe in lettuce plantings in the El Centro area, Imperial County. (Swift). DELAWARE - On cabbage in area of Kent County. (Burbutis, Conrad). NEW MEXICO - Again building up in lettuce fields in Eddy County. Damage as high as 30 percent in some Dona Ana County fields. (N. M. Coop. Rpt.).

IMPORTED CABBAGEWORM (Pieris rapae) - DELAWARE - Present on cabbage in New Castle County. Prevalent to abundant on cabbage and cauliflower in area of Kent County, with heavy feeding on younger heads. (Burbutis, Conrad).

CABBAGE APHID (Brevicoryne brassicae) - On brussel sprouts in New Castle County and one field of cabbage in Kent County. (Burbutis, Conrad).

A LEAF MINER (Liriomyza sp.) - CALIFORNIA - Caused heavy mining of cauliflower plants in Watsonville area, Santa Cruz County. (Cal. Coop. Rpt., Oct. 31).

BEAN LEAF ROLLER (Urbanus proteus) - FLORIDA - Larvae averaged 2-4 per plant in 10 acres of snap beans in an abandoned field at Hague, Alachua County. Det. W. P. Hunter. (Fla. Coop. Sur.).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - DELAWARE - Present on spinach and carrots in Kent and New Castle Counties. (Burbutis, Conrad).

A LEAFHOPPER (Ollarianus strictus) - CALIFORNIA - Adults heavy on asparagus plantings at El Centro, Imperial County. (Cal. Coop. Rpt.).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - Heavy in green bolls on about 300 acres and moderately heavy on 700 additional acres in southern Dona Ana County. Cotton gin lint cleaner insepctions of 54 gins in 5 counties revealed 336 pink bollworms from a total of 30,546 ginned bales. (N. M. Coop. Rpt.).

WHITEFLIES - CALIFORNIA - Check of cotton fields in Mt. Signal-McCabe areas and Bard Valley, Imperial County, showed generally low population. Check of crumple leaf conditions in these areas showed that losses in yield of cotton previously reported as severe (CEIR 8(40):851) could not be substantiated at this time. Symptoms were readily found in most fields checked, with one stub cotton field showing nearly 100 percent infestation, while other fields showed 10-85 percent infected plants. (Cal. Coop. Rpt., Oct. 24).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A SAWFLY (Neodiprion sp.) - NORTH CAROLINA - Large numbers of adults observed in area of Granville County where there was a severe outbreak in May 1958. Mating and oviposition observed and apparently has just begun as limited numbers of eggs were seen in needles. Four to 10 adults were swarming at 6-8 foot trees and large numbers in larger trees. (Jones, Farrier).

A NITIDULID (Carpophilus sp.) - NEW MEXICO - Very abundant in chrysanthemums and roses in Dona Ana and Luna Counties. (N. M. Coop. Rpt.).

COTTONY-CUSHION SCALE (Icerya purchasi) - TEXAS - Heavy on several ornamentals in Brazos County (Garner) and light to medium in Cherokee County (Chandler).

EUONYMUS SCALE (Unaspis euonymi) - CALIFORNIA - Heavy on euonymus plants in Menlo Park, San Mateo County. (Cal. Coop. Rpt.).

SCALE INSECTS - FLORIDA - *Crypthemichionaspis ulmi* (?) collected on elm at Sanford, Seminole County, May 28. Det. H. Morrison. If positive determination is obtained, this will constitute a new State record for this scale. (Fla. Coop. Sur.). OKLAHOMA - *Aspidiotus pseudospinosus* collected September 26 on *Ilex* sp. at Tulsa, Tulsa County, and October 1 on *Amaranthus* sp. in a store at Edmond, Oklahoma County, is new to the State. (Apt).

APHIDS - NEW MEXICO - *Rhopalosiphum rufomaculatum* and *Macrosiphoniella sanborni* heavy on chrysanthemums in Dona Ana County. (N. M. Coop. Rpt.).

THRIPS - NEW MEXICO - Light in roses and chrysanthemums in southern counties. (N. M. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

HORN FLY (*Siphona irritans*) - OKLAHOMA - Averaged 25-75 per head of cattle in southern and south central parts of State. (VanCleave).

A HORSE BOT FLY (*Gasterophilus* sp.) - OKLAHOMA - Egg laying light to medium on horses in southern part of State. (VanCleave).

SCREW-WORM (*Callitroga hominivorax*) - MISSISSIPPI - Positive case reported from a farm at Port Gibson, Claiborne County, October 28. (Pate).

A CATTLE LOUSE (*Solenopotes capillatus*) - VIRGINIA - Medium to heavy on dairy heifers in herd at Blacksburg, Montgomery County. (Turner).

BENNEFICIAL INSECTS

PREDATORS - VIRGINIA - Soldier beetle larvae in large numbers around a home in Botetourt County (Morris, Leonard) and in large numbers around yards and houses and in hay fields in Essex County (Amos, Richardson). *Arilus cristatus* collected in Spotsylvania and Floyd Counties. (Morris, Kash, Talley). OKLAHOMA - *Hippodamia convergens* averaged 0.5-1 per sweep in alfalfa in southern and south central areas, *Nabis* sp. 0.2-0.8 and lacewings 0.2-0.5. (VanCleave).

MISCELLANEOUS INSECTS

BROWN-BANDED ROACH (*Supella supellectilium*) - NORTH DAKOTA - Two new home infestations reported from Fargo, Cass County. Spread continues in the State. (N. D. Ins. Rpt.).

ORIENTAL COCKROACH (*Blatta orientalis*) - NORTH DAKOTA - Reported in a home at Linton, Emmons County. (N. D. Ins. Rpt.).

CASEMAKING CLOTHES MOTH (*Tinea pellionella*) - TEXAS - Larvae caused damage to carpets in homes in Corpus Christi, Nueces County. (Reynolds).

A LYCTUS BEETLE (*Lyctus* sp.) - OREGON - Damaged wooden furnishings in a home in Portland, Multnomah County. (Capizzi).

A WEEVIL (*Trachyphloeus bifoveolatus*) - OREGON - Entered homes and caused concern to residents in Portland, Multnomah County, and Oregon City, Clackamas County. (Capizzi).

A SUBTERRANEAN TERMITE - UTAH - Infesting a home at Vernal, Uintah County. (Knowlton).

CORRECTIONS

CEIR 8(43):902 - Delete *Alypiodes geronimo* (Barnes): species has been recorded from Arizona.

CEIR 8(43):908 - Change family name from Phalaenidae to Noctuidae following *Plusia chalcites* (Esp.) and *Spodoptera mauritia* (Bdv.).

LIGHT TRAP COLLECTIONS

	Pseud. unip.	Agrot. yps.	Prod. ornith.	Perid. marg.	Laphyg. frug.	Ala. argil.	Helio. zea
ARKANSAS							
Fayetteville 10/9-29	6	2			1		278
Kelso 10/9-29	14	14		5	11		226
Morrilton 10/9-29	69	154					228
FLORIDA							
Gainesville 10/29-11/4		2					3
Quincy 10/21-27	1	2					
INDIANA(Counties)							
Orange 10/18-21	22	60	2	25	2		17
Tippecanoe 10/23-30	18	19		7			11
LOUISIANA							
Baton Rouge 10/24-11/6	62	62	4	3	75	174	46
Franklin 10/28-11/3				2	2	5	1
MISSISSIPPI							
*State College 10/25-11/7	24	31	1	1	11		110
NEBRASKA							
Alliance 10/6-26	127	6		15	1		67
North Platte 10/10-30	1814	916	5	287	445		2685
Scotts Bluff 10/14-11/3	276	55		66			52
SOUTH CAROLINA							
Charleston 10/27-11/9	39	38	4	1	10	2	6
Clemson 10/25-31	5	11	1	1	3		1
Florence 10/26-11/1	20	10	4	1	1	1	
TENNESSEE(Counties)							
Blount 10/21-11/3		6	6	1	2		3
Cumberland 10/21-11/3	17	88	1	3	2	1	37
Greene 10/21-27	26	15	4	1	4	2	13
Johnson 10/21-11/3	16	11	3	7	3	1	12
Madison 10/21-11/3	10	11	27		3		21
Maury 10/21-11/3	49	46	7	4	8	2	19
Robertson 10/21-11/3	36	66	9	4	6	20	48
TEXAS							
Waco 10/25-31	77		12	55		1198	36

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*Two traps - State College

SUMMARY OF INSECT CONDITIONS - 1958

UTAH

Reported by G. F. Knowlton, D. W. Davis, H. E. Dorst,
H. F. Thornley, B. A. Haws and County Agricultural Agents

The season of 1958 was one of extreme insect and mite activity. Beet leafhopper and the curly-top virus disease were responsible for the loss of approximately 85 percent of the tomatoes planted in the State. In addition it reduced sugar beet tonnages measurably and killed out large acreages of other susceptible crops. False chinch bugs were the most abundant and general they had been in 35 years. Pea aphid and spider mites were especially damaging to deciduous tree fruits, berry crops, shade trees and ornamentals. Lygus bugs, alfalfa weevil, forest tent caterpillar, Say stink bug, thrips on grains and alfalfa, codling moth, peach twig borer, corn earworm, mites on corn, many aphids in spring, and pea aphid all season, rose and Virginia-creeper leafhoppers, white grubs in lawns, cattle lice, house flies, mosquitoes and boxelder bug were among the species much more damaging than normal.

Cereal and Forage Insects: GRASSHOPPERS caused substantial crop and range losses, estimated at $570,420. Considerable control resulted in an estimated saving of $345,850. Control was carried out in cropland largely by farmers, ranchers, orchardists and home gardeners. The most damaging grasshopper species were *Melanoplus bilituratus*, *M. bivittatus*, *M. femur-rubrum*, *M. packardi*, *M. borealis*, *Camnula pellucida* and *Aulocara elliotti*. Cooperative programs controlled grasshoppers over an area of 110,000 acres, in protecting an estimated 340,000 acres. MORMON CRICKET (*Anabrus simplex*) was aircraft baited and controlled over 26,258 acres of rangelands in San Juan, Piute and Uintah Counties, in time to prevent economic losses. A total of 11,150 acres were infested at egg-laying time, threatening outbreaks during 1959. SPOTTED ALFALFA APHID (*Therioaphis maculata*) caused most serious damage to alfalfa crops over the southern one-half of the State, with some control in Washington and Millard Counties. Estimated loss of alfalfa hay, seed and new plantings is placed at $95,000 compared with an estimated $780,000 loss during 1955, $500,000 loss in 1956 and $165,000 loss in 1957. The aphid moved northward as far as Tooele, Salt Lake, Carbon and Emery Counties. PEA APHID (*Macrosiphum pisi*) caused substantial losses of forage alfalfa hay and reduced seed production in several areas. Many outbreaks developed in spring and early summer and damage continued until late fall. Injury to canning peas was light generally. LYGUS BUGS (largely *Lygus elisus*, *L. hesperus* and *L. desertus*) were very abundant on seed alfalfa and seed beet crops in most areas, resulting in economic losses wherever control was delayed or omitted. SUPERB PLANT BUG (*Adelphocoris superbus*) was in normal numbers in alfalfa. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) has spread to all counties of Utah, except Daggett County. Damage was less conspicuous than during 1954 and 1955. ALFALFA WEEVIL (*Hypera postica*) caused severe damage to much untreated alfalfa acreage. Benefit from control is estimated to exceed $560,000. ALFALFA CATERPILLAR (*Colias philodice eurytheme*) caused local crop injury in several counties. A TORTRICID (*Tortrix pallorana*) caused scattered seed crop injury, largely in northern areas. ARMY CUTWORM (*Chorizagrotis auxiliaris*) damaged less alfalfa and range plants in spring than normal. WESTERN YELLOW-STRIPED ARMYWORM (*Prodenia praefica*) damage to some alfalfa, tomato and truck crops in Cache, Box Elder, Weber, Davis and Millard Counties was estimated at $84,000. Damage by *P. ornithogalli* occurred in many southern and south central areas.

VARIEGATED CUTWORM (Peridroma margaritosa) caused local damage to alfalfa in Juab, Piute and Millard Counties. ALFALFA LOOPER (Autographa californica) caused scattered, moderate damage. BROWN WHEAT MITE (Petrobia latens) was less damaging, particularly after spring rains ended. Damage was most severe in Juab and San Juan Counties. CORN LEAF APHID (Rhopalosiphum maidis) caused damage to spring barley in several counties. Injury to corn was light. An ORCHARD GRASS APHID (Hyalopteroides dactylidis) damaged this grass in local areas. ENGLISH GRAIN APHID (Macrosiphum granarium) caused less than normal damage to small grains. SWEETCLOVER APHID (Myzocallidium riehmi) was general but not economic. MIRIDS (largely Stenotus binotatus and Leptopterna ferrugatus) damaged grasses and small grains in local areas. SAY STINK BUG (Chlorochroa sayi) caused very extensive damage to small grains and to alfalfa seed crops, estimated to exceed $1,000,000. Repeated migrations were noted about the State from May into early September. A FALSE CHINCH BUG (Nysius sp.) was extremely numerous on range and about alfalfa and grain fields, roadsides, etc. CORN EARWORM (Heliothis zea) caused extensive damage to sweet corn and moderate to serious injury to field corn throughout Utah. Infestations varied from 80 to 100 percent where no control was applied. Mite damage to corn was unusually severe over much of the State. Local injury occurred from wheat straw-worm, wireworms, false wireworms, corn sap beetles, thrips and flea beetles in scattered localities. WESTERN HARVESTER ANT (Pogonomyrmex occidentalis) caused usual damage to range and forage crop lands CLOVER SEED CHALCID (Bruchophagus gibbus) caused approximately normal economic damage. CLOVER SEED WEEVIL (Miccotrogus picirostris) was found in Cache County, apparently new to the State.

Fruit Insects: Aphid infestations on fruits generally were above normal. WOOLLY APPLE APHID (Eriosoma lanigerum), A LEAF-CURL APHID (Anuraphis helichrysi), ROSY APPLE APHID (Anuraphis roseus) and GREEN APPLE APHID (Aphis pomi) were conspicuously damaging in many localities. CODLING MOTH (Carpocapsa pomonella) infestations in well-sprayed orchards sometimes ran five to twenty percent; unsprayed or poorly sprayed orchards often were 100 percent "wormy". SPIDER MITES were commonly severe in apple and pear orchards and on raspberry and red currant crops. Bryobia praetiosa complex was generally less numerous and less damaging in orchards this season. Eotetranychus willamettei was present in some localities, especially on apples. Tetranychus mcdanieli was highly injurious in many apple and sour cherry orchards in Weber and Box Elder Counties. It caused severe damage to raspberry and red currant foliage in a number of counties. Panonychus ulmi was well above normal in northern orchards. Tetranychus canadensis infested a few orchards. PEAR LEAF BLISTER MITE (Eriophyes pyri) was extremely damaging, particularly to a few large orchards in Utah County. PEACH SILVER MITE (Vasates cornutus) and A PLUM NURSERY MITE (V. fockeui) were occasionally damaging, especially in Washington and Utah Counties. A CHERRY RUST MITE was sometimes injurious in Utah County. Mite injury, in general, was very much above average in orchards and berry patches. LEAFHOPPERS often varied from numerous to abundant on apple, plum and prune, and in fall on raspberries in some localities. A GEMINATE LEAFHOPPER (Colladonus geminatus) again was low in numbers in alfalfa fields and orchards. SAN JOSE SCALE (Aspidiotus perniciosus) was locally damaging. PEAR-SLUG (Caliroa cerasi) caused moderate to sometimes severe damage to cherry, pear and plum foliage. CALIFORNIA PRIONUS (Prionus californicus) damaged roots of some fruit trees in northern counties. CATFACING INSECTS caused moderate damage. Damage to ripe fruits by BOXELDER BUG (Leptocoris trivittata) was well above normal in northern and central Utah. PEACH TREE BORER (Sanninoidea exitiosa) and WESTERN PEACH TREE BORER (S. e. graefi) caused general damage to stone fruit orchards throughout the State. PEACH TWIG BORER (Anarsia lineatella) caused above average damage quite generally to fruits and twigs. PEAR THRIPS (Taeniothrips inconsequens) was moderately numerous in cherry and pear orchards in spring. CHERRY FRUITWORM (Grapholitha packardi) was not common in cherries this season. CLIMBING CUTWORMS damaged occasional orchards in Box Elder, Salt Lake and Weber Counties, with scattered local damage elsewhere. SHOT HOLE BORER (Scolytus rugulosus) caused local damage, especially in weakened cherry, apricot and peach trees. WALNUT HUSK FLY (Rhagoletis completa) again caused economic damage to the English walnut crop at Ogden, and appeared for the first time in black walnuts at Provo. WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) was again almost completely controlled by insect parasites and predators. GRAPE BERRY MOTH (Paralobesia viteana) damaged grapes in a few Washington County vineyards. Several species of CURRANT APHIDS caused about normal damage with above normal injury to red currant foliage by Capitophorus ribis. CURRANT FRUIT FLY (Epochra canadensis) generally infested black and yellow currants. A CURRANT PSYLLID was common but rarely severe. MAGGOTS again produced galls in chokecherry fruits in Logan, Blacksmith Fork, Ogden, Parleys and Bountiful Canyons. ROSE STEM GIRDLER (Agrilus rubicola) and RASPBERRY ROOT BORER (Bembecia marginata) damaged a number of raspberry patches in Box Elder, Salt Lake, Utah and Davis Counties. STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) caused above normal injury, especially in north central counties. STRAWBERRY CROWN MOTH (Ramosia bibionipennis) larvae killed some new raspberry plants, damaged a large number of red currant canes at Huntington and many dewberry canes at Providence. ROOT WEEVILS (Brachyrhinus ovatus, B. rugosostriatus and sometimes B. sulcatus) damaged untreated strawberry patches commonly, with moderate injury to roots of raspberry, some other cane fruits and occasionally roses and privet hedge at Springville.

Nut Insects: WALNUT HUSK FLY (Rhagoletis completa) caused moderate damage in the Ogden area and late in the season was found in black walnut husks at Provo. APHIDS severely infested pecans in southern Utah, English walnuts at Moab and were moderate elsewhere. A FILBERT APHID caused its usual infestation to filberts. Moderate MITE injury to nut tree foliage was sometimes noted.

Truck Crop Insects: TOMATO FRUITWORM (Heliothis zea) population was very low. A "Statement of Outlook" was issued on July 28th, to canners and canning crop growers. This indicated that the tomato fruitworm infestation would be light and insecticide applications to tomatoes not warranted. CORN EARWORM (Heliothis zea) was serious on early market corn, so canning corn growers were informed that an increase in infestation was expected by mid-August. It was indicated that insecticide applications would be warranted, particularly in Utah County. Approximately 50 percent of the northern canning corn acreage was treated, 70 percent in Utah County, where one canning company applied insecticides to about 2000 acres. Control started in July and continued into early September. Damage was severe to late season canning corn. The infestation was the highest it has been since 1952. One hundred percent infestation was common when not controlled. TOMATO RUSSET MITE (Vasates lycopersici) was not damaging. LYGUS BUGS (predominantly Lygus elisus) were very abundant on sugar beet seed crops in southern and northern areas in spring of 1958. This and SAY STINK BUG were comtrolled on all southern seed beet plantings and on a portion of the acreage in northern Utah. The late winter population of BEET LEAFHOPPER (Circulifer tenellus) and host plant area was large in northern Mexico, southwestern Arizona, southeastern California, southern Nevada and southern Utah. A "Statement of Outlook" was issued February 27, and substantiated in the Report of April 11, that the expected movement of the beet leafhopper in late April and May would be approximately 1500 times larger than in 1957 and 30 times larger than in 1952. The movement started May 6. Population on sugar beets averaged 1.0 leafhopper per square foot of beet row by May 15. It increased to 8 leafhoppers per foot of beet row the last week of May and first week of June. Populations were the highest since the destrucitve outbreak of 1926. Damage to tomatoes, sugar beets, potatoes, beans, cucumbers, squash and other susceptible crops is estimated to well exceed $1,000,000. Some potato fields intended for seed certification could not be certified due to beet leafhopper transmitted curly-top disease. VINEGAR FLY (Drosophila melanogaster) population in tomato fields was lower than 1957, until mid-September and early October, when the population became heavy. Heaviest populations originated near orchards where substantial fruit droppings occurred or where culled fruit was discarded. APHIDS were about normal on vegetable crops in spring, below normal in mid-summer. SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons), and A LEAFHOPPER (Empoasca filamenta) caused occasional damage in local areas. Melons in southern Utah were damaged by large populations of the latter species. A BLACK FLEA BEETLE again damaged sweet corn throughout the season in Washington County. Some damage occurred in other southern counties, and in a few spots farther north. FLEA BEETLE damage generally was moderate to normal in gardens, with an occasional potato and sugar beet field severely attacked. MELON APHID (Aphis gossypii) damage to cucumbers, squash and cantaloups was below normal. DUSKY SAP BEETLE (Carpophilus lugubris) caused local injury to sweet corn in Utah County and in many other communities, largely in home gardens. Damage was greatest in southern and south central counties. SQUASH BUG (Anasa tristis) caused less than normal injury. SEED-CORN MAGGOT (Hylemya cilicrura) injury was occasionally severe in Washington County, usually normal elsewhere. ONION MAGGOT (H. antiqua) injury was common. CORN LEAF APHID (Rhopalosiphum maidis) damage was light on corn. TWO-SPOTTED SPIDER MITE damage sometimes was severe on canning and home garden sweet corn, being worse in some areas of field corn. Damaged celery in Box Elder County was conspicuous in the fall. POTATO TUBERWORM (Gnorimoschema operculella) was scarce in Washington and Iron Counties. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) was more generally damaging in Weber and Davis Counties, and locally at Kanab. MEXICAN BEAN BEETLE (Epilachna varivestis) caused conspicuous damage in a number of northern and central counties. PEA WEEVIL (Bruchus pisorum) was numerous, requiring general control on canning peas. Spider mites, thrips and aphids caused some damage to beans. SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) and STRIPED CUCUMBER BEETLE (Acalymma vittata) caused moderate damage to susceptible crops, particularly in southern Utah. ASPARAGUS BEETLE (Crioceris asparagi) and SPOTTED ASPARAGUS BEETLE (C. duodecimpunctata) caused normal damage in northern and some central counties. ONION THRIPS (Thrips tabaci) injury to onions was common. CUTWORM damage was common in spring but lower during mid and late-summer. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) caused damage to tomatoes, beets and home gardens in a number of northern localities, usually when larvae migrated from heavily infested alfalfa fields. HORNWORMS (Protoparce spp.) caused spotted, sometimes conspicuous damage to tomatoes and potatoes. IMPORTED CABBAGEWORM (Pieris rapae) damage was normal, with CABBAGE LOOPER (Trichoplusia ni) injury above average. GARDEN CENTIPEDE attacked home gardens and occasionally commercial crops in scattered central and northern localities.

Shade Tree Insects: FOREST TENT CATERPILLAR (Malacosoma disstria) caused extensive damage to foliage of maples, poplars, willows and other shade trees and also to ornamentals, especially in northern areas. APHIDS on shade trees were unusually troublesome during spring. A COTTONWOOD BLOTCH LEAF MINER (Paraleucoptera albella) caused much less conspicuous damage in the Sevier-Piute County area, along the Sevier River and Clear Creek Canyon. Leaf miners conspicuously infested quaking aspen foliage in a number of northern mountain areas, but less extensive damage occurred than in 1956 and 1957, while poplar and cottonwood leaf miner infestations were noted in scattered communities. A BOXELDER LEAF ROLLER (Archips negundana) caused only local damage. BOXELDER PSYLLID (Psylla negundinis) generally was moderate. NORWAY-MAPLE APHID (Periphyllus lyropictus), A LEAF-CURL ASH APHID (Prociphilus fraxinifoliae) and several other aphids caused less than normal damage to shade trees. Willows and narrow leaf poplars were sometimes severely infested with aphids, with POPLAR VAGABOND APHID (Mordwilkoja vagabunda) serious in parts of the Uintah Basin. GREAT BASIN TENT CATERPILLAR (Malacosoma fragilis) caused below normal injury in Washington, Kane and San Juan Counties to poplars and other susceptible trees and shrubs. COOLEY SPRUCE GALL APHID (Chermes cooleyi) caused below normal damage. LOCUST BORER (*Megacyllene robiniae*) damage increased in Salt Lake County, killing and damaging many trees. LEAFHOPPER injury to elms was above normal. OYSTERSHELL SCALE (*Lepidosaphes ulmi*) caused extensive injury especially to ash, poplar, willows and lilacs. A MITE (*Eotetranychus weldoni*) caused substantial injury to weeping willow and black willow foliage. ELM LEAF BEETLE (*Galerucella xanthomelaena*) was particularly destructive to elm foliage in Salt Lake and Weber Counties.

Insects of Ornamentals: LEAFHOPPERS (*Erythroneura ziczac*, *E. elegans* and spp.) again extensively damaged Virginia creeper foliage during late summer and fall in many communities. Leaves frequently were brown and dead before late August. ROSE LEAFHOPPER (*Edwardsiana rosae*) discolored foliage of cultivated roses generally, becoming numerous on spirea in fall in some nothern localities. SPIREA APHID (*Aphis spiraecola*), POTATO APHID (*Macrosiphum solanifolii*), ROSE APHID (*M. rosae*) and other aphids were among those which injured ornamentals during the season. JUNIPER SCALE (*Diaspis carueli*) caused severe damage in some parts of Box Elder, Emery and Salt Lake Counties. A WESTERN FLOWER THRIPS was again abundant in most cultivated and wild-flower blossoms. EUROPEAN EARWIG (*Forficula auricularia*) caused its usual widespread annoyance and some damage about homes and gardens over most of the State. WHITE GRUBS damaged numerous lawns in more counties and communities than usual. BEET LEAFHOPPER damage to petunia was moderate to severe in Davis and Weber Counties.

Insects Affecting Livestock: CATTLE LICE caused extensive damage generally over the State with many herds being severely infested. CATTLE GRUBS (*Hypoderma lineatum* and *H. bovis*) caused substantial but normal damage. HORSE BOTS were common and bot flies very annoying to horses in a number of localities. HORN FLY (*Siphona irritans*), STABLE FLY (*Stomoxys calcitrans*), HORSE FLIES, DEER FLIES and BLOW FLIES caused common and about average annoyance to livestock. HOUSE FLY (*Musca domestica*) numbers and annoyance were excessive over the State, expecially in late summer and fall. MOSQUITOES were troublesome in spring and summer, with some equine encephalitis developing in horses in several counties. POULTRY MITES and LICE and HOG LICE were fairly common, sometimes present in abundance. EAR TICK (*Otobius megnini*) caused local livestock damage in a few counties. TICKS, particularly *Dermacentor andersoni*, were numerous during spring on cattle and horses, and attacked persons on rangelands. A SARCOPHAGID (*Wohlfahrtia opaca*) larvae sometimes attacked livestock, kit mink and other animals. A SNIPE FLY (*Symphoromyia hirta*) seriously annoyed man and cattle in some canyons. SHEEP KED (*Melophagus ovinus*) was abundant and injurious generally, especially on lambs and in winter. Maggots also caused damage.

Man and Household: HOUSE FLY was commonly very numerous throughout the State in cities, towns, on farms and in establishments handling food. CLUSTER FLY (*Pollenia rudis*) invaded many homes in fall. COCKROACHES infested many commercial establishments and various homes, apartments, motels, etc. A few BED BUG infestations were noted. Clover mite was especially troublesome in many counties during late winter and spring. A tiny BAGWORM (*Apterona crenulella*) infested the outside of a few northern homes, as well as ornamentals and fruit trees about homes, but chief damage was to range plants in Cache, Box Elder, Rich, Summit and Weber Counties. STORED-FOOD INSECTS in homes caused damage and annoyance in pantries, kitchens and to stored foods. Such damage extended to granaries, livestock feeds. A SUBTERRANEAN TERMITE again damaged many homes and other buildings in various parts of the State. Termite damage becomes more extensive each year. BITING MIDGES were extremely troublesome in many localities for a 2 to 5 week period during the summer. Some of the worst annoyance occurred about the Great Salt Lake, parts of Millard and Juab Counties. Locally elsewhere. MOSQUITOES were unusually troublesome in spring and in many areas throughout the season. The outbreak of encephalitis in northern counties caused concern about the mosquito problem, particularly in Davis, Weber, Salt Lake, Utah, Box Elder and Cache Counties. BLACK WIDOW SPIDER (*Latrodectus mactans*) was frequently found about homes and farm buildings.

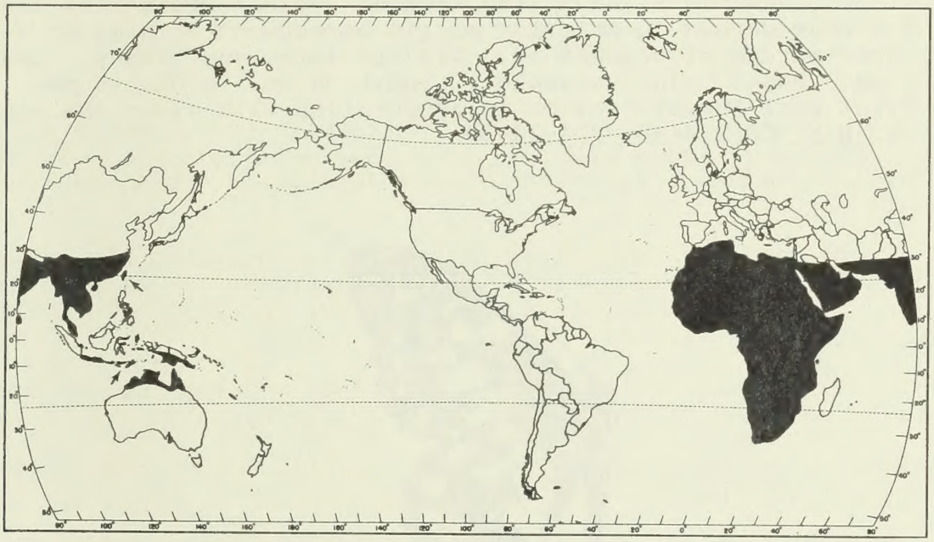
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

LEMON BUTTERFLY (*Papilio* *demoleus* (L.))

Economic Importance: This papilionid is widely distributed from Africa to northern Australia and is sometimes a destructive pest of citrus in several areas, especially to young nursery plants. It also sometimes causes serious damage to older plants, stripping the leaves when larvae are numerous. Cultivated and wild citrus are considered the most important hosts, certain varieties being more readily attacked at different locations. Several subspecies of *P. demoleus* are known, *P. d. demoleus* and *P. d. malayanus*, being considered major pests in the Indian area.

Distribution: Range extends from Formosa and China to Iran, Arabia and the whole of Africa. Also occurrs in the smaller Sunda Islands to northern Australia and southern New Guinea; absent from the Philippines, larger Sunda Islands, Celebes and the Moluccas.

Hosts: Larval feeding occurs on leaves of cultivated and wild citrus, baelfruit, Chinabox jasminorange, curryleaftree, Malaytea scurfpea, atalantia, Malay glycosmis and common jujube. In Ceylon, larvae prefer leaves of *Ferronia* *elephantum*.

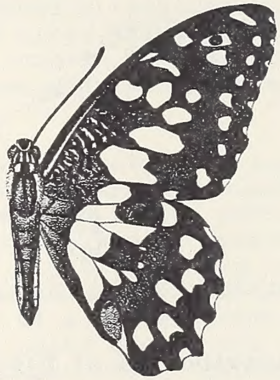


General Distribution of *Papilio* *demoleus*

(Papilionidae, Lepidoptera)

Life History and Habits: Eggs are laid on leaves, usually singly, but sometimes in groups of 2 or 3. Hatching occurs in 3 days, larval feeding beginning almost immediately. There are usually 5 larval instars, occasionally only 4 occur. Pupation takes place on the underside of a leaf or against a stalk or twig, the supporting loop of the chrysalis rather short. Occasionally larvae may migrate to other plants to pupate. The butterflies have a quick, strong flight, rising very little above the ground. They prefer the flowers of citrus and *Raphanus*. The total life-cycle varies from 20 to 100 days in summer. Hibernation takes place in the pupal stage, but year-around reproduction is not uncommon in milder climates. Larvae throw out a red Y-shaped process from behind the head and emit a characteristic odor when distrubed.

Description: Adults somewhat variable, depending on subspecies. Body, sides of head, lateral thoracic stripes pale yellow. Forewing above base dotted with pale yellow, dots uniting into transverse lines; large cell-patch, usually divided into 2 spots, at upper angle of cell 2 or 3 spots; a macular discal band, upper spots small and far apart, posterior ones large and usually contiguous; band on hindwing not interrupted; both wings with row of submarginal spots and small marginal lunules, hindwing with red anal spot, not tailed. Egg pale-yellow; about 1 mm. in diameter. Young larva blackish, large V-spot in middle; lateral stripe from prothorax backwards, second stripe from anal segment forwards, milky-white; several rows of setiferous processes. Mature larva yellow-green above, broad-greasy white lateral band from segment 5 to end. Greenish dorsal part of segments 2 to 5 bordered narrowly with curved black line which does not reach base of legs; abdomen and legs a dirty transparent white. Segments 8 and 9 with diagonal yellow-brown band reaching from center of 9 near dorsum to anterior margin of segment 8; similar patch at posterior lower margin of segment 10. Prolegs large and fleshy. Length 33 mm. width 7 mm. Pupal color variable. Length 30 mm.; width 10 mm. (Prepared in Plant Pest Survey Section in cooperation with other ARS agencies and the U. S. N. M.) CEIR 8(46) 11-14-58



Adult of *Papilio demoleus demoleus* (L.))

Figure (except map) from Talbot, G. 1939. The Fauna of British India including Ceylon and Burma. Butterflies. Vol. 1, 589 pp. London.

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